

**RECOVERY IMPLEMENTATION PROGRAM
FY-2000 SCOPE-OF-WORK**

No.: 22-A-4
ISMP-USFWS:Yampa Humpback Pop. Est.

Lead Agency: U.S. Fish and Wildlife Service
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Category (check one)

- ☐ Ongoing project
☒ Requested new start
☐ Unsolicited project
☐ Outside funding

Date: 22 May 2000

I. Title of Proposal: Humpback chub monitoring in Yampa Canyon

II. Relationship to Recovery Program/Ranking Factors:

General Recovery Program Support.

V. Monitor Populations.

A.1. Conduct standardized monitoring program.

III. Study Background/Rationale:

The Yampa River humpback chub population is one of only five existing populations. Very little is known about the Yampa River population, the result of inhabiting an inaccessible canyon reach and being relatively rare over the period of recent collection (Karp and Tyus 1990; Tyus 1998). The Yampa River within Yampa Canyon has been designated critical habitat and the population is important for recovery of the species. Tyus (1998) points out that the population may have declined in recent years, perhaps the result of predation by the non-native channel catfish. Long-term monitoring will provide baseline data on species status and serve as a response measure for management activities, e.g. non-native fish removal or flow alterations. Furthermore, such monitoring would provide estimates of several population parameters, e.g. population size, survival rates, and recruitment rates, needed for refining life-stage models and setting management objectives (Crowl and Bouwes, 1997; Lentsch et al. 1997).

IV. Study Goals, Objectives, End Product:

1. Develop procedures for monitoring trends of the humpback chub population in the Yampa River.
2. Develop procedures for determining reproductive success of the humpback chub population.

End product: Final report Jan 2001 for procedures for estimating trends and reproductive success; annual report each year on trends and reproductive success.

V. Study area

Yampa River within Yampa Canyon (rmi 0.1-41.0), Dinosaur National Monument; raft access only.

VI. Study methods/approach

1998 sampling showed that it is unlikely we can capture enough adult humpback chub to make a capture/recapture population estimate, as originally planned. However, it did show that many chubs and other native species can be captured by raft electrofishing, and that seining in shallow eddy and backwater habitats is a promising technique for capturing juvenile chubs. The 1999 effort will further explore seining and light trapping for monitoring juvenile humpback chub trends and assessing reproductive success.

Prior to 1999 sampling, a statistician (designated by the recovery program) will be consulted to determine alternative sampling designs (e.g., sample sizes, procedures, and requisite assumptions) appropriate for estimating precision and testing important assumptions needed for measuring trends in adult and juvenile populations.

VII. Task description and schedule:

1. Using electrofishing rafts, sample the Yampa River through Yampa Canyon in late June to capture a adult humpback chub; PIT tag all humpback chubs >150 mmTL.
2. Using seines and light traps, sample the Yampa Canyon in early July for larval and juvenile humpback chubs.
3. Each year, analyze data and consult a statistician to modify sampling design to achieve efficient procedures for long-term monitoring of population trends and recruitment rates.
4. After three years, write a final report that outlines a procedure for determining long-term population trends and recruitment rates.
5. Conduct the monitoring protocol every year until the monitoring program is modified or terminated.

Study Schedule:

1. Task 1: 1998-2000
2. Task 2: 1998-2000
3. Task 3: 1999-2000
4. Task 4 Final report 1 Jan 2002
5. Task 5 each year beginning 2001

VIII. FY-01 Work

a. Deliverables/due dates: annual report 10 Dec 2001; final report 1 Jan 2002

b. Budget

Task 4	
Labor	\$6.0K
Travel	0.4K
Equipment	1.0K
Other	1.0K
Total	8.4K

Task 5	
Labor	\$12.2K
Travel	
Equipment	3.4K
Other	2.0K
Total	17.6K

Grand total \$26.0K

IX. Budget Summary:

FY-01 \$26K

*Does not include BR-FWS transfer overhead costs

XI. References

Anderson, D.R., and K.P. Burnham. 1994. AIC model selection in overdispersed capture-recapture data. *Ecology* 75(6):1780-1793.

Crowl, T.A., and N.W. Bouwes. 1997. Modeling population dynamics of Colorado squawfish, razorback sucker, and humpback chub: for management objective development. Draft report to Recovery Implementation Program.

Douglas, E.D., and P.C. Marsh. 1996. Population estimates/population movements of *Gila cypha*, an endangered cyprinid fish in the Grand Canyon Region of Arizona. *Copeia* 1996(1):15-28.

Karp, C.A. and H.M. Tyus. 1990. Humpback chub (*Gila cypha*) in the Yampa and Green Rivers, Dinosaur National Monument, with observations on roundtail chub (*G. robusta*) and other sympatric fishes. *Great Basin Naturalist* 50(3):257-264.

Lebreton, J.-D., K.P. Burnham, J. Clobert, and D.R. Anderson. 1992. Modeling survival and testing biological hypotheses using marked animals: a unified approach with case studies. *Ecological Monograph* 62:67-118.

Lentsch, L.D., C.A. Toline, T.A. Crowl, and Y. Converse. 1997. Development of endangered fish management objectives for the upper Colorado River Basin. Draft final report to the Recovery Implementation Program.

Tyus, H.M. 1998. Early records of the endangered fish *Gila cypha* Miller from the Yampa River of Colorado with notes on its decline. *Copeia* 1998(1):190-193